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Patent Claims

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- 1. Synthetic particle formed from at least one nucleic acid sequence or nucleic acid derivative sequence and one protein having a molecular weight in the range from 3900 to 4300.
- 2. Synthetic particle according to Claim 1, where the protein consists predominantly of arginine.
- 3. Synthetic particle according to Claim 1 or 2, where the protein is selected from the following group: protamine, protamine base, protamine derivatives or salts, preferably protamine sulfate or protamine ohloride.
- 4. Synthetic particle according to any of the preceding claims, where the nucleic acid sequence is in single-stranded form.
- 5. Synthetic particle according to any of the preceding claims, where the nucleic acid sequence is an oligonucleotide or a derivative thereof.
- 25 6. Synthetic particle according to any of the preceding claims, where the oligonucleotide consists of at least 5 nucleotides.
- 7. Synthetic particle according to any of the 30 preceding claims, where the derivative is a phosphorothicate or an anionic derivative.
- 8. Synthetic particle according to any of the preceding claims, where the average diameter of the particle is in the range from 10 nm to 100 μm .

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- 9. Synthetic particle according to any preceding claims, where the particle carries a surface electric charge.
- 10. Synthetic particle according to any of preceding claims, where the surface charge is in the range from -40 mV to +40 mV.
- Process for the preparation of synthetic particles 11. according to any of the preceding claims, with the 10 following steps:
 - a) preparation of an aqueous first solution containing a protein having a molecular weight in the range from 3900 to 4300,
 - addition to the first solution of a second b) solution containing a nucleic acid sequence or nucleic acid derivative sequence and
 - mixing of the first and second solution. C)
 - Process according to Claim 11 where the first and 12. the second solution are free of salts.
 - Process according to either of Claims 11 or 12, 13. where the molar ratio of nucleic acid sequence or nucleic acid derivative sequence to protein is adjusted to produce a predetermined surface charge.
 - Process according to any of Claims 11 to 13, where the protein consists predominantly of arginine.
- 35 15. Process according to any of Claims 11 to 14, where the protein is selected from the following group: protamine, protamine base, protamine derivatives





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or salts, preferably protamine sulfate or protamine chloride.

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6. Process according to Claim 15, where protamine, protamine base, protamine derivatives are obtained from salmon sperm.

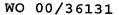
- 17. Process according to any of Claims 11 to 16, where the nucleic acid sequence is in single-stranded form.
- 18. Process according to Claim 17, where the nucleic acid sequence is an oligonucleotide or a derivative thereof.

19. Process according to Claim 18, where the oligonucleotide consists of at least 5 nucleotides.

20 20. Process according to any of Claims 17 to 19, where the derivative is a phosphorothicate or an anionic derivative.

- 21. Process according to any of Claims 11 to 20, where the diameter of the particle is in the range from 10 nm to 100 μm .
 - 22. Process according to any of Claims 11 to 21, where the particle carries a surface electric charge.
 - 23. Process according to any of Claims 9 to 22, where the surface charge is in the range from -40~mV to +40~mV.
- 35 24. Use of a protein having a molecular weight in the range from 3900 to 4300 for the preparation of a synthetic particle containing at least one nucleic acid sequence or nucleic acid derivative sequence.







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25. Use according to Claim 24, where the protein consists predominantly of arginine.

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- 5 26. Use according to Claim 24 or 25, where the protein is selected from the following group: protamine, protamine base, protamine derivatives or salts, preferably protamine sulfate or protamine chloride.
 - 27. Use according to any of Claims 24 to 26, where the nucleic acid is an oligonucleotide which is preferably single stranded and preferably consists of at least 5 nucleotides, or a derivative thereof which is preferably in the form of a phosphorothicate.

JAS.

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